REMARKS

Claims 1, 2, 4-12, 14-20 and 31-42 are pending in the application. Claims 1, 2, 4-12, 14-20 and 31-42 stand rejected in the referenced office action.

Independent claim 11 has been amended to specify that the property of the fluid is estimated downhole while the fluid is being pumped or static. Support for this amendment is found at page 12 lines 20-22.

Dependent claim 32 has been amended to correct a typographic error and change the claim dependency.

New claim 43 has been added. This includes all the elements of claim 1 and also specifies that the resonator be in direct contact with the fluid downhole.

No new matter has been added by the amendments. Reconsideration of the application as amended is respectfully requested. The Examiner's objections and rejections are addressed in substantially the same order as in the reference office action.

REJECTION UNDER 35 USC § 101

Claim 11 stand rejected under 35 USC § 101 as being directed to non-statutory subject matter. Claim 11 has been amended to specify that the value of a property is

estimated downhole while the fluid is being pumped or static. This is believed to address the rejection under 35 USC § 101

REJECTION UNDER 35 USC § 102

Claims 1, 11 and 31 stand rejected under 35 USC § 102(b) as being anticipated by *Birchak* (US5741962).

The present invention uses measurements of the response of a resonator in contact with a fluid downhole in conjunction with a chemometric relation to estimate a property of the fluid.

Claim 1, as amended, includes a resonator in contact with the fluid downhole. As discussed in the specifications, the response of the resonator to the actuation is responsive to a property of the fluid.

At page 8 of the referenced office action, the Examiner asserts that in **Fig. 2** and **col. 5, lines 26-39,** *Birchak* discloses that the surface of the delay line and the surface of the transducer are preferably bonded together. Applicant fails to see the relevance of this to claim 1 which specifies that it is the resonator that is contact with the fluid.

Attention of the Examiner is drawn to the plain language definition of ":contact":

union or junction of surfaces

Merriam Webster Online Dictionary.

By no stretch of the imagination is the surface of the transducer in *Birchak* in contact with a surface of the fluid when it is clearly disclosed therein that there is a delay line between the surface of the transducer and the surface of the fluid.

In order to sustain a rejection under 35 USC § 102, a single prior art reference must disclose each and every limitation of the claim arranged as in the claim. This is clearly not the case here. Accordingly, applicant respectfully submits that claim1 and claims 2, 4-10, 41 and 42 that depend upon claim 1 are patentable under 35 USC § 102 over *Birchak*.

It is further noted in *Birchak* that

"the delay line **104** maybe a machineable glass or any other suitable material that would **sufficiently delay the acoustic signal** passing therthrough, preferably by a time that **exceeds the transducer ringdown time**..." (emphasis added).

Thus, it is clear that if the transducer were actually in contact with the borehole fluid, the device of *Birchak* would be rendered inoperative due to inability to measure a signal during the transducer ringdown. Hence *Birchak* teaches away from the claimed invention.

Hence any combination of *Birchak* with any other prior art would not be permissible for the purposes of a rejection under 35 USC § 103. Accordingly, applicant respectfully submits that claim 1 and claims 2, 4-10, 41 and 42 that depend upon claim 1 are also patentable under 35 USC § 103 over *Brichak* and the prior art of record..

The argument that *Birchak* teaches away from the present invention was made in the Request for Continuing Examination and not addressed by the Examiner in the referenced office action. Applicant respectfully requests that the Examiner address this argument.

Independent claim 11 specifies that the resonator be adjacent to the downhole fluid. The Merriam Webster Online Dictionary defines "adjacent" as:

having a common endpoint or border

Birchak clearly discloses a delay line between the transducer and the fluid. There is not and cannot be a common border between the transducer and the fluid. Accordingly, claim 11 and claims 12 and 14-20 that depend upon claim 11 are also patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record.

Independent claim 31 includes the substantive limitations of claim 1 discussed above. Accordingly, claim 31 and claims 32 -40 that depend upon claim 41 are also patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record.

REJECTION UNDER 35 USC 103

Claims 2, 4, 12, 14, 32-34 and 41-42 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* (US63465813).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC § 102. As noted above, *Brichak* teaches away from the claimed invention.

Claims 5-8, 15-18, 35-38 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* as applied to claim 1 and in view of *McFarland et al.* (US6182499).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC §102. The combination of *Kleinberg* and *McFarland* does not teach of suggest the particular elements of the independent claims discussed above.

Claims 9-10, 19-20, and 39-40 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* and *McFarland et al.* as applied to claim 1 and in view of *He et al.* (US5798982).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC §102. The combination of *Kleinberg, McFarland* and *He* does not teach of suggest the particular elements of the independent claims discussed above.

Claims 41-42 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg, McFarland et al.* and *He et al.* as applied to claim 1 and in view *Netzer* (US5763781).

The patentability of these claims has been addressed above with reference to the rejection under 35 USC §102. The combination of *Kleinberg, McFarland, He* and *Netzer* does not teach of suggest the particular elements of the independent claims discussed above.

With respect to new claim 43, the claim includes all the elements of independent claim 1 and further specifies that the resonator be in direct contact with the fluid. The term "direct" when used as an adjective is defined as:

> marked by absence of an intervening agency, instrumentality, or influence.

As pointed out by the Applicant and admitted by the Examiner, the resonator of *Birchak* is separated from the fluid by a delay line. Hence *Birchak* **does not** disclose a resonator in direct contact with a fluid.

The application is now believed to be in condition for allowance.

The Commissioner is hereby authorized to charge any fee and credit any overpayment associated with this response to **Deposit Account No. 02-0429(584-37008-USCP).**

Respectfully submitted,

Dated: 31 July 2006

Kaushik P Sriram Reg. No. 43,150
Madan, Mossman & Sriram, P.C.
2603 Augusta Suite 700
Houston, Texas 77057-5638
Tel: (713) 266-1130
Fax: (713) 266-8510
Attorney For Applicants